Title (en)

Crystal-axis-aligned vertical side wall DRAM and process for manufacture thereof

Title (de)

DRAM über einer zur kristallografischen Achse vertikal ausgerichteten Seitenwand und Verfahren zu dessen Herstellung

Title (fr)

DRAM sur une paroi latérale verticale alignée avec un axe cristallographique et son procédé de fabrication

Publication

EP 1071129 A3 20010613 (EN)

Application

EP 00306232 A 20000721

Priority

US 35929299 A 19990722

Abstract (en)

[origin: EP1071129A2] A dynamic random access memory (DRAM) cell comprising a deep trench storage capacitor having an active transistor device partially disposed on a side wall of the trench. The side wall is aligned to a first crystallographic plane having a crystallographic orientation along a single crystal axis. A process for manufacturing such a DRAM cell comprises: (a) forming a deep trench in a substrate, (b) forming a faceted crystal region along the trench side wall having a single crystallographic orientation, and (c) forming a transistor device partially disposed on the faceted crystal region in the side wall. The faceted crystal region may be formed by growing an oxide collar, such as by local thermal oxidation under oxidation conditions selected to promote a higher oxidation rate along a first family of crystallographic axes than along a second family of crystallographic axes. <IMAGE>

IPC 1-7

H01L 21/8242; H01L 27/108

IPC 8 full level

H10B 12/00 (2023.01)

CPC (source: EP KR US)

H10B 12/00 (2023.02 - KR); **H10B 12/0383** (2023.02 - EP US); H10B 12/0387 (2023.02 - EP US); H10B 12/053 (2023.02 - EP US)

Citation (search report)

- [XAY] DE 4217420 A1 19921203 - MITSUBISHI ELECTRIC CORP [JP]
- [XAY] US 4971926 A 19901120 - KINUGAWA MASAAKI [JP]
- [A] US 5543348 A 19960806 - HAMMERL ERWIN [US], et al
- [A] PATENT ABSTRACTS OF JAPAN vol. 013, no. 277 (E - 778) 26 June 1989 (1989-06-26)
- [A] PATENT ABSTRACTS OF JAPAN vol. 012, no. 481 (E - 694) 15 December 1988 (1988-12-15)

Cited by

DE10236217B4; DE10139827A1; DE10104742A1; DE10104742B4; DE10255866A1; DE10255866B4; DE10326158B4; DE10296608B4; US6894336B2; US7268381B2; WO0199162A3

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DOCDB simple family (publication)

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DOCDB simple family (application)

EP 00306232 A 20000721; CN 00120497 A 20000712; JP 2000209997 A 20000711; KR 20000041237 A 20000719; TW 89106878 A 20000413; US 35929299 A 19990722; US 89442701 A 20010628